

JAMES R. DELINE is Vice President of DBD Systems, Inc. Mr. DeLine was formerly Vice President of Research and Development with MRI Systems Corporation where he helped plan and implement the enhancement of the Remote File Management Systems (RFMS) into a commercially viable data base management system, System 2000. Mr. DeLine was founder and Executive Vice President of Information Research International, Inc. (IRI), a software development firm which later merged with MRI. As Manager of the Systems Program Department at the University of Texas, he was responsible for software development and technical liaison with users of the University's Computational Center. He received a BSEE and BS, Business, from the University of Colorado, and a MA, Computer Sciences, from the University of Texas.

BERNARD K. PLAGMAN, a Vice President of DBD Systems, Inc., is a specialist in information systems planning and data base management. He has directed and participated in the planning for and implementation of data base supported information systems in the financial, manufacturing and retail industries. He is an internationally recognized expert in the data base field, having served as the National Chairman of ACM's Special Interest Group on Management of Data (SIGMOD). As a Senior Management Systems Consultant at the Stanford Research Institute, Mr. Plagman performed consulting services for senior management of major corporations in the areas of long-range planning, data base management and on-line systems development.

RONALD W. HENRY has served as a consultant and instructor for The Institute for Advanced Technology over the past four years. He has supervised and developed data base and information management systems, and researched improved instructional techniques for data management, MIS standards for data processing, and operations research. As a Senior Systems Specialist with the Data Services Division of Control Data Corporation, he was responsible for the development of Management Information Systems. He has been involved in data base management since 1957 and his work has spanned the entire spectrum of information processing.

TUITION

Tuition, including course materials and luncheons, is \$395 for the first participant and \$370 for all additional persons from the same organization attending the same presentation. Effective January 1, 1976, the cost of tuition for this seminar will be \$485 for the first participant. If a check is received in advance of the opening date of the seminar, a \$25 discount will be allowed for other participants from the same organization attending the same presentation. Checks should be made payable to The Institute for Science and Public Affairs.

Classes begin at 9:00 a.m. and end at 5:00 p.m.

CANCELLATION

For all cancellations received less than two weeks before scheduled presentation, there is a \$50 cancellation fee.

DATES AND LOCATIONS

Seminars are conducted at the hotels listed below. Cost of hotel rooms is not included in the tuition. The hotels will hold a block of rooms for participants until two weeks before the seminar. Hotel reservation cards will be forwarded with registration confirmations. Please contact the hotels directly for reservations, mentioning IAT; ISPA; the seminar; and dates attending.

December 3-5, 1975
Sheraton National Hotel
Columbia Pike and Washington Boulevard
Arlington, Virginia 22204
Room Reservations: 703/521-1900

January 14-16, 1976
New York Sheraton
870 Seventh Avenue
New York, New York 10019
Room Reservations: 212/247-8000

February 25-27, 1976
Miyako Hotel
Post and Laguna Streets
San Francisco, California 94115
Room Reservations: 415/922-3200

March 24-26, 1976
Holiday Inn-Bethesda
8120 Wisconsin Avenue
Bethesda, Maryland 20014
Room Reservations: 301/652-2000

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INSTITUTE FOR SCIENCE AND PUBLIC AFFAIRS

DATA BASE STRUCTURES and FILE ORGANIZATION

CODE A 2 2 1

FOUR 3-DAY SEMINARS

December 3-5, 1975
Washington, D.C.

January 14-16, 1976
New York, New York

February 25-27, 1976
San Francisco, California

March 24-26, 1976
Washington, D.C.

presented by

THE INSTITUTE FOR
ADVANCED TECHNOLOGY

THE COURSE: Perhaps the most pressing problem in the effective use of computers today is that of organizing data to be responsive to the varied requirements of users and systems. This seminar directly addresses the use of Generalized Data Base Management Systems in attacking this problem. An in-depth study and analysis of the various methods of access and the data structures of today's Data Management systems, together with analytic tools, are provided to permit systems analysts and data base designers to properly evaluate and utilize these systems most effectively. It provides the information needed to create a response oriented data base supported environment.

WHO SHOULD ATTEND: Data processing managers, systems analysts, and data base designers, as well as programmers concerned with the effective relationship of programs, data, and the computer itself. The participant in this seminar should have a firm appreciation for essential data processing techniques.

COURSE OUTLINE

I. THE DATA BASE ENVIRONMENT

1. Feasibility of an MIS
2. Functional Components of the MIS
3. Significance/Ad Hoc Reporting
- B. Transaction Oriented Systems
 1. Processing Concepts
 2. Major Operating Components
 3. Information Flow
- C. The Role of the Data Base

II. METHODS OF ACCESS

- A. Concepts of File/Data Organization
 1. Logical vs. Physical Data Relationships
- B. Sequential
 1. Processing Characteristics & Constraints
 2. Serial Processing
 3. Skip Sequential
- C. Direct
 1. Concepts of Direct Processing
 2. Characteristics & Constraints
- D. Randomization/Key Transformation
 1. Hashing Methodology
 2. Synonym Processing
 3. Space Management & Control
 4. Trade-off Analysis
- E. Directories/Indexing
 1. Generic Indexing Methods
 2. Multi-Level Indexes
 3. Comparative Analysis of GDBMS Indexing Methods

4. Update/Retrieval Considerations
5. Optimization of Index Structures
- F. Indexed Random
- G. Bit Vector/Matrix
 1. Use of the Bit Profile/Mask
 2. Multi-attribute Processing
- H. Inverted File/Index
 1. Concepts & Essential Functions
 2. Operational Environment of the Inverted File
 3. Advantages & Disadvantages

III. DATA STRUCTURES/INFORMATION PATHS

- A. Imbedded Link Structures
 1. Concepts of Pointer/Link Relationships (Associative—Sequential—Hierarchical)
 2. Multi-Level Network Structures
 3. Comparative Analysis of GDBMS Systems Methodology (DBTG—TOTAL—IMS)
 4. Optimization of Link Structures
 - Network Relationships
 - Serial/Sequential Processing
- B. Index/Inverted Index Structures
 1. Hierarchical Structures
 2. Pseudo Network Relationships
- C. Comparative Storage Considerations
- D. Conditional Request Strategies
 1. Conditional Search
 2. Directed Conditional Search
 3. Conditional Retrieval

IV. PHYSICAL DATA STORAGE CONSIDERATIONS

- A. Space Management/Allocation Strategies
- B. Vertical vs. Horizontal Distribution
- C. The "Place Near" Option
- D. Update/Deletion Strategies
- E. GDBMS Buffer Control

V. GENERALIZED DATA BASE MANAGEMENT SYSTEMS

- A. Definition of Terms
- B. Objectives of GDBM Systems
- C. The Data Base Task Group Report (CODASYL/DBTG)
 1. The Status of Standardization Efforts
 2. The Guide/Share Report
- D. Components of the GDBMS
 1. Data Description Language (DDL)
 2. Data Manipulation Language (DML)
 3. Services and Utilities

- E. Classification and Major Features of Current Data Management Systems
 1. Imbedded Link Systems/DBTG
 2. Directory Supported Systems
 3. Inverted File/Index Systems
- F. Associated Software
 1. File Management/Query Systems
 3. Data Dictionary/Directory Systems

VI. PRIVACY AND SECURITY

- A. The Nature of the Problem
- B. Data Protection Methodology
 1. Access Control
 2. Data Structure Considerations
 3. Encryption
 4. Functional Control
 5. Prevention of Contention

VII. RECOVERY

- A. Preventive Methods
- B. Logging and Back-up
- C. Recovery Procedures
 1. Catastrophic Failure
 2. Intermittent Failure
 3. Valid/Incorrect Data Entry
 4. Data Structure

VIII. CASE STUDIES

Commercial, Government & Scientific Data Base Applications

The right to cancel the seminar or to amend the syllabus is reserved.

THE INSTRUCTIONAL STAFF

(Each presentation will be conducted by one of the following seminar leaders)

HAROLD UHRBACH, an internationally recognized lecturer and consultant, is President of DBD Systems, Inc. He is a former Director of Professional Services for Auerbach Associates, Inc., with responsibility for the technical performance of all commercial systems; he directed and participated in a wide range of assignments, including the evaluation and selection of hardware/GDBMS software, the design and implementation of data base oriented systems, and the design of transaction oriented information systems. Mr. Uhrbach was an Advanced Techniques Specialist with General Electric where he concentrated on data base design and structures for commercial and government organizations, and was also Manager of Computer Applications for both Control Data Corporation and The Bendix Corporation. Mr. Uhrbach has lectured at New York University — The Management Institute, where he developed and taught a course in Data Management Techniques.